

THE BLACKFEET OF MONTANA.¹

THE Piegan Blackfeet of Montana are one of the most interesting of the tribes classed as Plains Indians, and it was well worth the while of Mr. Walter McClintock to spend many summers in living



FIG. 1.—A Woman Praying to the Sun. From "The Old North Trail."

among them in order to study and record their customs and religion. The worthiness of his intention and his personal character so appealed to Mad Wolf—one of the prominent men of the tribe—that he adopted Mr. McClintock as his son, hoping for an alliance with a white man that would be productive of sympathy, and fidelity to the welfare of his tribe, and who, by being familiar with their customs, religion, and manner of life, would tell the truth about them to the white race. The present book is a justification of Mad Wolf's action.

Mr. McClintock has not written a formal treatise on the Blackfeet, and much that students would like to learn about them has been omitted. A book that would satisfy specialists would not appeal to the public, and doubtless the object of Mad Wolf will be better attained by the narrative form in which the book is cast. The descriptions of climate and scenery, of hunting experiences, and the daily life of an Indian camp give a live and accurate impression, not only of the present condition of the Indians, but enable the reader to gain some idea of what that life was like in the past, when immense herds of antelope and bison roamed over the plains and when the Blackfeet warriors traversed wide tracts of country

in quest of plunder and adventure. The old men remember the days of their pride, but soon the memory of them will pass away and meagre records will alone be available in the books of such writers as Catlin, Mackenzie, Grinnell, and McClintock.

Several ceremonies are described, that of the "Beaver Medicine" being illustrated with numerous photographs showing various phases of the ceremony; as these were taken under adverse circumstances in a tipi, they are not so clear as the majority of the illustrations. Most readers will probably be astonished at the number of prayers that are said at these ceremonies, and Mr. McClintock deserves our thanks for having recorded so many of the prayers and chants. It is mainly by having the actual words that we can get a true insight into a ceremony, but, in addition, it is necessary to have a ceremony recorded by a sympathetic observer like the author, for it is quite possible to record every action and yet miss the spirit of a ceremony, as has too frequently been the case. Even at the present day the older Indians are extremely devout and spiritually-minded; this religious attitude of mind combined with a sense of dignity and personal worth are perhaps the most prominent characteristics of the Indian. The present writer has seen a Pawnee and a Blackfeet sacred bundle opened, and he quite endorses Mr. McClintock's statement that "It is difficult for one of the white race to realise the deep solemnity with which the Indians opened the sacred bundle. To them it was a moment of deepest reverence and religious feeling."

The Blackfeet are firm believers in the supernatural and in the control of human affairs by both good and evil powers in the invisible world. The great spirit, or great mystery, or good power, is everywhere and in everything—mountains, plains, winds, waters, trees, and animals. They believe that all animals receive their endowment of power from the sun, differing in degree, but the same in kind as that received by man and all things animate and inanimate. Some, such as the grizzly bear, bison, beaver, wolf, eagle, and raven, are worshipped because they possess a larger amount of the good power than the others, and so, when a Blackfoot is in trouble or peril, he naturally prays to them for assistance. The sun, as the great

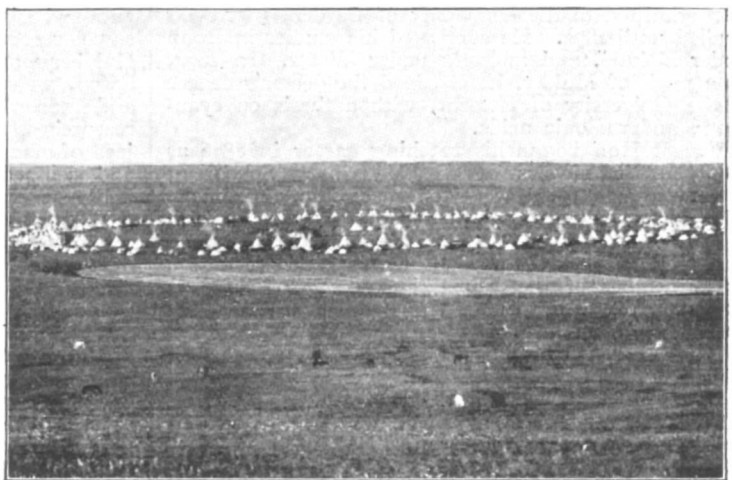


FIG. 2.—Tribal Camp of the Blackfeet. From "The Old North Trail."

centre of power and the upholder of all things, was the Blackfeet's supreme object of worship. He saw that every bud, leaf, and blossom turned its face to the sun, that the berries ripened under its warmth, that men and animals thrived under its sustaining

¹ "The Old North Trail," or Life, Legends, and Religion of the Blackfeet Indians. By W. McClintock. Pp. xxvi+539. (London: Macmillan and Co., Ltd., 1910.) Price 15s. net.

light, but all perished when it was withdrawn. The devout Blackfoot therefore called upon men, women, and children, and everything that had breath to worship the all-glorious, all-powerful sun-god who fills the heaven with brightness and the earth with life and beauty. The sun-dance was their great annual religious festival, their holy sacrament, the supreme expression of their religion. It must always have its beginning in a woman's vow, made to the sun-god for the recovery of the sick. The account given of the sun-dance is of interest, but far too short for the student.

Various legends and stories are given, and the occasions on which they were told are given, so the tales fit naturally into the pictures of Indian life that Mr. McClintock presents. This is a book that should be read by all who are interested in the ways and thoughts of alien folk, and its value is increased by the very numerous and excellent photographs taken by the author.

A. C. HADDON.

PROF. J. H. VAN 'T HOFF.

IT is with the deepest regret that we record the death of Prof. J. H. van 't Hoff, which occurred on March 1, at Steglitz, near Berlin. It was known that his health has not been good for the last two or three years, but the unexpected news of his death at the comparatively early age of fifty-eight years will come as a very heavy blow to the world of science. For a generation the name of van 't Hoff has been familiar to students of science in every part of the civilised world. It would be difficult indeed to mention any branch of modern scientific inquiry which has not been advanced by his fundamental discoveries. Certainly physiology, biology, and geology, as well as every branch of chemistry, owe a deep and undying debt of gratitude to the genius of van 't Hoff. The memory of his name and the influence of his work will outlive the centuries, and an integral part of the incorruptible heritage of science.

Jacobus Henricus van 't Hoff was born in Rotterdam on August 30, 1852, his father being a physician of that city. In 1869 he proceeded to the Polytechnikum at Delft, passing through the usual three years' technological course in two years. He was then admitted to the University of Leyden, where he studied until 1872. He continued his studies in Bonn under Kekulé, and in Paris under Wurtz. In 1874, as a pupil of Mulder, he obtained the doctor's degree of the University of Utrecht, with a thesis on cyan-acetic and malonic acids.

Van 't Hoff began his teaching career in 1876 as a docent in physics at the Veterinary School at Utrecht. In 1877 he went to Amsterdam, and in the following year was appointed professor of chemistry at the University of Amsterdam. Here he remained for eighteen years. In 1896 he was called to Berlin as a member of the Imperial Academy of Sciences and as a professor of the University of Berlin. He gave lectures on physical chemistry at the university, but a research laboratory was provided for him by the Academy of Sciences. In this position van 't Hoff continued to work until his death.

Such is a very brief account of the various positions he held during his lifetime. Needless to say, universities, scientific societies, and academies throughout the world vied with each other in honouring him. In 1888 he was elected a foreign member of the Chemical Society of London. He became a foreign member of the Royal Society in 1897, whilst the Physical Society of London elected him a foreign member this year. Amongst others, the universities of Cambridge, Chicago, Heidelberg, Manchester,

Greifswald, and Utrecht conferred honorary degrees upon him. The Kaiser bestowed on him the high distinction of the Order "Pour le Mérite." In 1901 the Nobel Prize was awarded to him. Many other honours and distinctions might be mentioned, but enough has been said to show the high esteem in which van 't Hoff was held throughout the world. Like all great men of science, the true story of his life is, however, to be found in his researches.

Under the influence of Kekulé, Wurtz, and Mulder, the earliest work of van 't Hoff relates to organic chemistry. But here his genius soon enabled him to strike a note of extraordinary originality. While still engaged with Mulder in synthetic organic work, he published in 1874 a short pamphlet in Dutch, in which he unfolded his new ideas concerning the extension of organic structural formulæ to three-dimensional space, and the relation between optical activity and the presence of an "asymmetric" carbon atom. In 1875 this appeared in an enlarged form under the title "La Chimie dans l'espace," a German edition, with a preface by J. Wislicenus, appearing in 1877 ("Die Lagerung der Atome im Raume"). Thus was born van 't Hoff's famous theory of the "tetrahedral" carbon atom and the science of stereochemistry. As all the world now knows, van 't Hoff's new ideas found many opponents. In particular Kolbe, who was an opponent of structural chemical formulæ in general, attacked the new ideas and their author with great virulence. But the "lame Pegasus" which the young lecturer at the Utrecht Veterinary School had bestridden was not so lame as Kolbe imagined, and van 't Hoff's ideas gradually triumphed. The warm support of Johann Wislicenus and the work of himself and his school greatly contributed towards the recognition and development of van 't Hoff's ideas.

Not long after the appearance of the "Chimie dans l'espace," van 't Hoff published a very remarkable and little-known book, entitled "Ansichten über die organische Chemie." In it he sought to give the whole of organic chemistry a strict and logical arrangement, wherein both old and new facts should find their proper place. At the same time he emphasised the necessity for a *quantitative* study of the course of chemical reactions, and developed the fundamental equations of chemical kinetics and equilibrium on the basis of the law of mass-action. Although in some respects van 't Hoff was preceded here by Guldberg and Waage, as well as by Harcourt and Esson, we perceive here the beginning of that long and masterly series of experimental and theoretical researches, whereby van 't Hoff raised the whole subject of chemical dynamics to the level of an exact and well-ordered branch of science. In the celebrated and now classical "Etudes de Dynamique chimique" (1884), van 't Hoff gave a collected account of these researches. Here is to be found a systematic study of the velocity of reactions, as *dependent on the number of reacting molecules*, a method for determining the number of reacting molecules from the experimental data, an exhaustive study of the "disturbing" actions, and an investigation of the influence of temperature on velocity of reaction. Masterly as was the treatment of chemical kinetics here set forth by van 't Hoff, one would err grievously in imagining the "Etudes" to contain nothing else. Nearly one-half of the monograph was devoted to chemical equilibrium and affinity. In this portion van 't Hoff abandoned the purely molecular-kinetic standpoint, treating the subject from the point of view of thermodynamics. One finds here the classical treatment of the equilibrium of "condensed" phases, and of the influence of temperature and pressure thereon. Here is also to be found the enunciation of van 't Hoff's